

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

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|--|---|---|
| Applicant's or agent's file reference 02R00087/PC | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/JP 03/10420 | International filing date (day/month/year) 18/08/2003 | (Earliest) Priority Date (day/month/year) 23/08/2002 |
| Applicant SHARP KABUSHIKI KAISHA | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

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☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 03/10420

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L21/203 H01L33/00 C30B23/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L C30B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| Y | <p>NAKAMURA S ET AL: "CANDELA-CLASS HIGH-BRIGHTNESS INGAN/ALGaN DOUBLE-HETEROSTRUCTURE BLUE-LIGHT-EMITTING DIODES" APPLIED PHYSICS LETTERS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 64, no. 13, 28 March 1994 (1994-03-28), pages 1687-1689, XP000441256 ISSN: 0003-6951 the whole document</p> <p style="text-align: center;">----- -/--</p> | 1-10 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

26 February 2004

Date of mailing of the international search report

05/03/2004

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 03/10420

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| Y | NAKAMURA S ET AL: "SUPERBRIGHT GREEN INGAN SINGLE-QUANTUM-WELL-STRUCTURE LIGHT-EMITTING DIODES" JAPANESE JOURNAL OF APPLIED PHYSICS, PUBLICATION OFFICE JAPANESE JOURNAL OF APPLIED PHYSICS. TOKYO, JP, vol. 34, no. 10B, PART 2, 15 October 1995 (1995-10-15), pages L1332-L1335, XP000702227 ISSN: 0021-4922 cited in the application 2. Experimental ----- | 1-10 |
| Y | EP 1 061 564 A (SHARP KK) 20 December 2000 (2000-12-20) paragraphs '0017!, '0023! ----- | 1-10 |
| Y | EP 1 164 210 A (SHARP KK) 19 December 2001 (2001-12-19) abstract ----- | 1-10 |
| Y | US 5 602 418 A (IMAI HIDEAKI ET AL) 11 February 1997 (1997-02-11) cited in the application examples 3-5 ----- | 1-10 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 03/10420

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| EP 1061564 | A | 20-12-2000 | GB 2350927 A | 13-12-2000 |
| | | | EP 1061564 A2 | 20-12-2000 |
| | | | JP 2001044123 A | 16-02-2001 |
| | | | US 6440214 B1 | 27-08-2002 |
| EP 1164210 | A | 19-12-2001 | GB 2363518 A | 19-12-2001 |
| | | | EP 1164210 A2 | 19-12-2001 |
| | | | JP 2002080298 A | 19-03-2002 |
| | | | US 2002015866 A1 | 07-02-2002 |
| US 5602418 | A | 11-02-1997 | WO 9403931 A1 | 17-02-1994 |
| | | | CA 2120610 A1 | 08-02-1994 |
| | | | DE 69230260 D1 | 09-12-1999 |
| | | | DE 69230260 T2 | 13-07-2000 |
| | | | EP 0607435 A1 | 27-07-1994 |